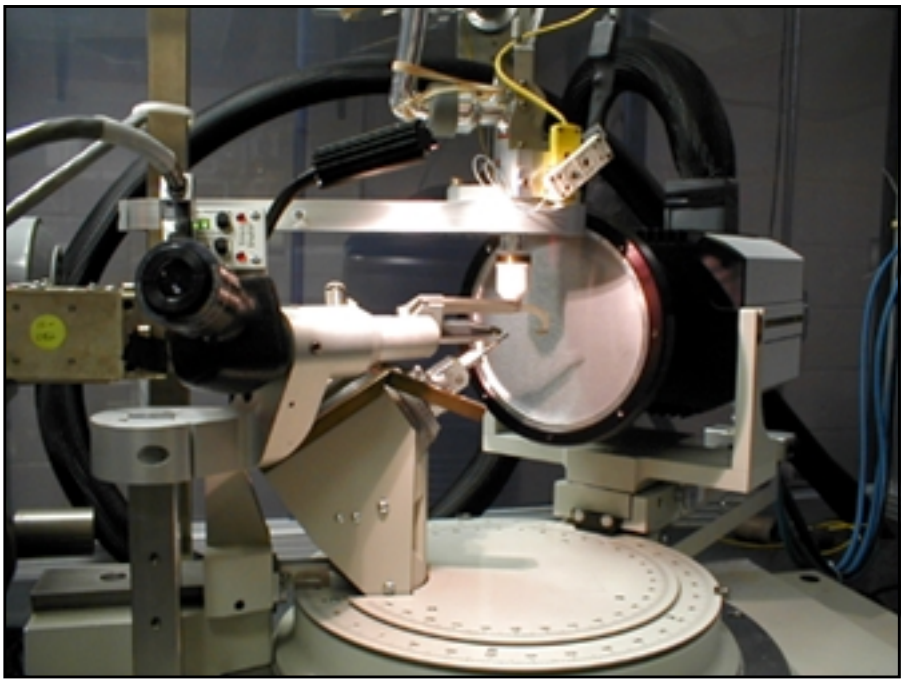
Automatic X-ray Diffractometers



Bruker 6000 CCD X-ray detector mounted on a platform goniometer

FUNCTION: Carries out atomic resolution single-crystal X-ray diffraction analyses. Capabilities exist to examine a wide range of materials from small inorganic molecules to macromolecular biological compounds.

INSTRUMENTATION:

- Bruker 6000 CCD area detector mounted on a three-circle goniometer. This equipment is coupled to a rotating anode Cu-Kα X-ray source using high brilliance Gobel mirror X-ray optics.
- Bruker 1000 CCD area detector mounted on a four-circle goniometer using a sealed tube Mo-Kα X-ray source and an incident beam graphite monochromator.
- Bruker P4 serial detector on a four-circle goniometer using a sealed tube Cu-Kα X-ray source and an incident beam graphite monochromator.

DESCRIPTION: The site includes laboratories for sample preparation and purification. Laboratory facilities are also provided for crystal growth. Three automated X-ray diffractometers are available for data acquisition, all of which may be operated over a range of sample temperatures (22° to –180° C). High-speed computational facilities are in place for structure solution and analyses.

CONTACT:
C. George • Code 6030 • (202) 767-3463
LOCATION:
Bldg. 35, Rm. 206 • NRL, Washington, DC

Atomic Force Microscope

Main components of the atomic force microscope

FUNCTION: The atomic force microscope (AFM) is a surface scanning instrument that detects surface topography with a lateral resolution of 0.5 to 1.0 nm and a vertical resolution of 0.1 to 0.2 nm.

DESCRIPTION: Our AFM is currently dedicated to the study of mechanisms involved in the growth of single crystals of biologically active macromolecules suitable for X-ray diffraction studies. This instrument scans a sharp stylus located at the end of a flexible cantilever over the crystal surface. Surface images are obtained of dynamically growing crystals that have been placed in a fluid cell. The concentrations of the various species in solution and temperature are varied to directly observe the effects on the crystal growth process. The goal is to reproducibly grow crystals with few defects.

CONTACT:
J. Konnert • Code 6030 • (202) 767-3267
LOCATION:
Bldg. 35, Rm. 207 • NRL, Washington, DC